Three Rivers District Council Consultancy support – Scope 1, 2 and 3 Carbon Emissions – 2021/22

Report v.4

Report produced in January 2022

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THREE RIVERS DISTRICT COUNCIL

CONSULTANCY REPORT – A COMPARISON OF THE COUNCIL'S CARBON FOOTPRINT FOR SCOPE 1, 2 & 3 EMISSIONS

Contents

1 Introduction

This report provides an update of the carbon footprint for Three Rivers District Council which can be used to monitor performance for emitting carbon in the Council's own operations. The carbon footprint has been undertaken in accordance with best practise guidance by the Greenhouse Gas Protocol and calculated using conversion factors for the carbon dioxide equivalent (CO_2e) published by the Department for Business, Energy & Industrial Strategy (BEIS).

The reporting compares the financial years of 2018/19 to 2021/22.

The carbon footprint is categorised into scopes, which cover:

Scope 1 (direct) emissions are from activities owned or controlled by the Council. Examples of Scope 1 emissions include emissions from combustion in council owned or controlled boilers, furnaces and vehicles.

Scope 2 (indirect) emissions are associated with purchased electricity, heat, steam and cooling. These indirect emissions are a consequence of the Council's energy use, but occur at sources that the Council do not own or control. Examples include grid supplied electricity and heat provided through a heat network.

Scope 3 (other indirect) emissions are a consequence of the Council's actions that occur at sources the Council do not own or control and are not classed as Scope 2 emissions. Examples of Scope 3 emissions include business travel by means not owned or controlled by the Council (grey fleet), disposing of the Council's own waste and purchased goods in the supply chain etc.

2 Carbon Footprint

2.1 Carbon Reporting Boundaries

The organisational boundaries determine what emissions are the responsibility of the Council or others. This can be based on who owns, operates, or exerts control over certain assets. The buildings categorised under Scope 1 & 2 within this reporting are those where energy is purchased or acquired and consumed by the Council. The vehicles categorised under Scope 1 are vehicles that the Council own, lease and operate purely for the Council's own operations.

Scope 3 emissions are classified under 15 different categories as detailed under Appendix B. As Scope 3 emissions are under the influence of the Council, but not under its direct control, it can be difficult to obtain the necessary data to calculate the associated carbon emissions from some Scope 3 sources. One of the larger contributors to carbon emissions is purchased goods and services.

Emissions from assets a company owns and leases to another entity, but does not operate, can either be included in Scope 3 or excluded from the inventory.

Table 3 below shows all of the sources that make up the reporting boundary for the Council, within this report.

The emissions from these sources represent a good data set for a Council, as it is not uncommon for Councils to have data available for electricity and gas only.

There are sources that are missing from the reporting and the largest contributor is likely to be from purchased goods and services, which is generally very difficult to gather data and calculate emissions about. This category includes all upstream (i.e., cradle-to-gate) emissions from the production of products purchased or acquired by the Council in the reporting year. Products include both goods (tangible products) and services (intangible products).

Cradle-to-gate emissions include all emissions that occur in the life cycle of purchased products, up to the point of receipt by the Council. Relevant purchases to the Council may include capital goods, such as office supplies, office furniture, computers, telephones, travel services, IT support, outsourced administrative functions, consulting services, janitorial, landscaping services, maintenance, repairs and operations.

The Council should set up procedures to record all emission sources related to its operations for future reporting, and it is likely that the overall emissions will increase as the data quality improves.

2.2 Carbon Emissions

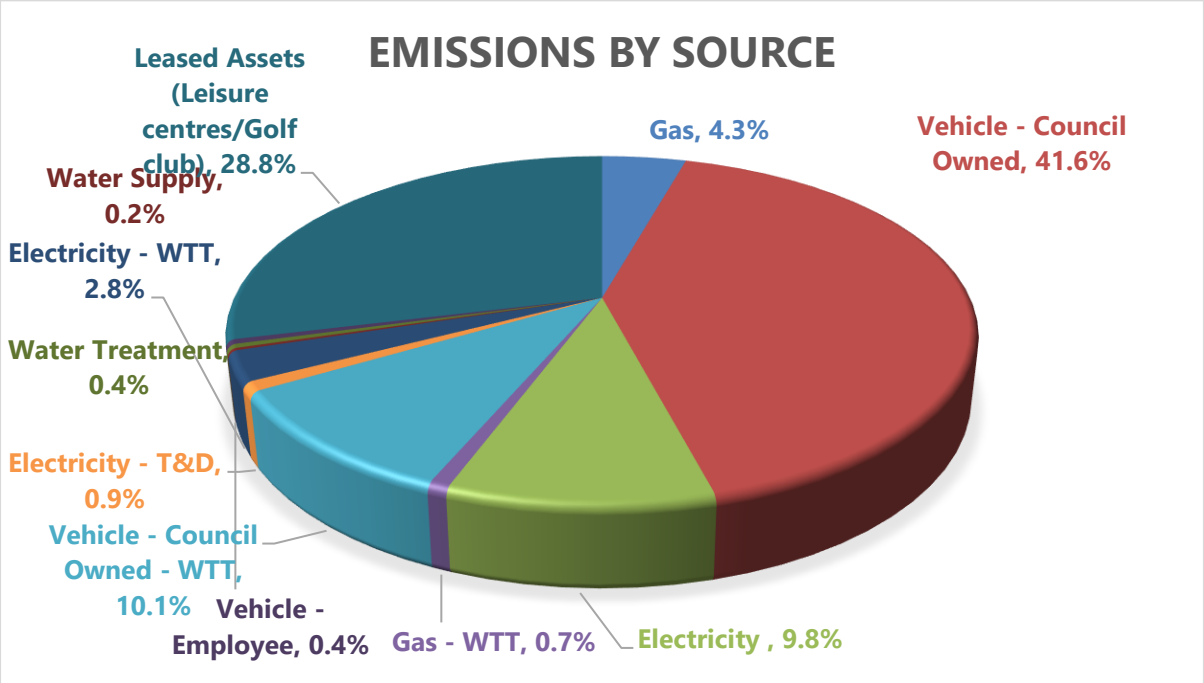
2.2.1 Emissions for 2021/22

The set of data below shows a summary of the most recent year available of 2021/22.

Table 1: Carbon emissions by source for 2021/22

2021/2022			
Emissions Source	**Scope**	**% Split**	**TonnesCO2e**
Gas	1	4.3%	91.8
Vehicle - Council Owned	1	41.6%	877.9
Electricity	2	9.8%	206.7
Gas - WTT	3	0.7%	15.7
Vehicle - Council Owned - WTT	3	10.1%	213.4
Electricity - T&D	3	0.9%	18.3
Electricity - WTT	3	2.8%	58.6
Water Supply	3	0.2%	4.4
Water Treatment	3	0.4%	7.7
Vehicle - Employee	3	0.4%	9.0
Leased Assets (Leisure centres/Golf club)	3	28.8%	609.2
Total		**100%**	**2,113**

Chart 1: Carbon emissions by source for 2021/22

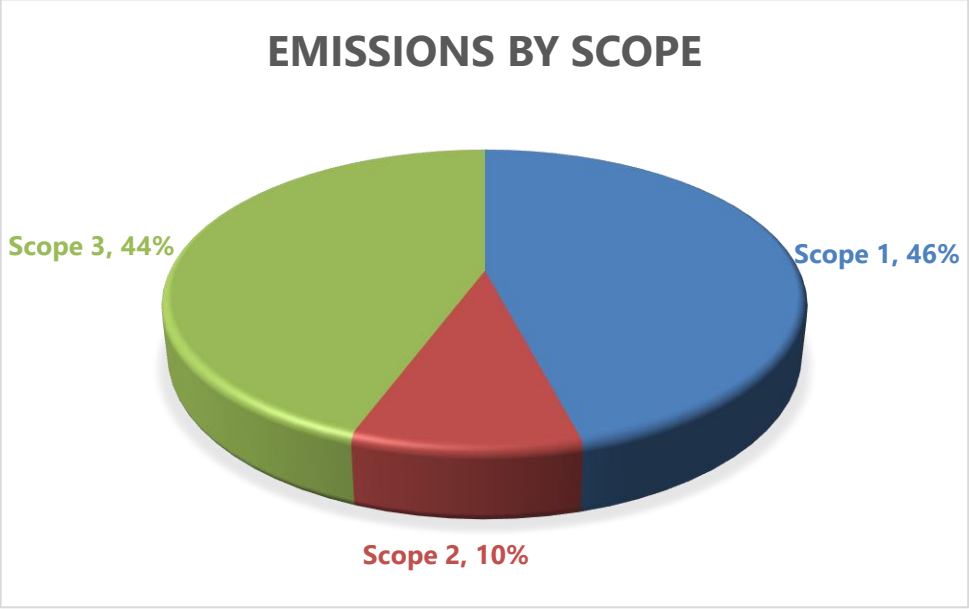


Transportation by *Council Owned vehicles* made the greatest contribution to the total carbon footprint of the Council at 37.7% (877.9 tonnes CO_2e), approximately 91% of direct greenhouse gas (GHG) emissions (Scope 1). Following closely were emissions from *Leased Assets* accounting for 28% (609 tonnes CO_2e) of total emissions. This is mostly attributable to the electricity and gas consumption at William Penn Leisure Centre which was approximately 53% (electricity) and 87% (gas) of total consumption of the Council's leased assets.

Table 2: Carbon emissions by scope for 2021/22

Emissions Source	% Split	TonnesCO2e
Scope 1	46%	970
Scope 2	10%	207
Scope 3	44%	936
Total	**100%**	**2,113**

Chart 2: Carbon emissions by scope for 2021/22



At 936 tonnes CO_2e, Scope 3 had the second largest contribution to total GHG emissions with the *Leased Assets* being the major contributor as previously cited.

Proper tracking of the 15 distinct categories (refer to Appendix B) in both the upstream and downstream directions of the Council's value chain would facilitate more accurate Scope 3 carbon reporting. Additionally, a clear definition of organisational boundaries based on financial control/responsibility and operational boundaries would also be useful to this end.

2.2.2 Comparison of Emissions for 2018/19 to 2021/22

Table 3: Difference in carbon emissions by year

	Tonnes of CO_2e			
	Apr 2018 - Mar 2019	**Apr 2019 - Mar 2020**	**Apr 2020 - Mar 2021**	**Apr 2021 - Mar 2022**
Scope 1 - Direct Emissions	**994**	**989**	**972**	**970**
Natural Gas	136	131	109	92
Council Owned Vehicles	858	858	863	878
Scope 2 – Electricity Emissions	**340**	**273**	**184**	**207**
Total Scope 1 & 2 Emissions	**1,333**	**1,263**	**1,156**	**1,176**
	0.115	-0.170		
Scope 3 – Indirect Emissions	**894**	**1,128**	**997**	**936**
Gas – Well to tank emissions	19	17	14	16
Council Owned Vehicles – Well to tank emission	202	204	207	213
Electricity – Distribution and transmission emissions	29	23	16	18
Electricity – Well to tank emissions	55	41	28	59
Water Supply	N/A	2	3	4
Water Treatment	N/A	5	6	8
Employee Vehicle emissions	21	7	6	9
Leased Assets (Leisure centres/Golf club)	569	827	718	609
Total Gross Emissions	**2,227**	**2,390**	**2,153**	**2,113**
Carbon offset	0	0	0	0
Solar PV Exported	0	0	0	0
Total Net Emissions	**2,227**	**2,390**	**2,153**	**2,113**
Further Information				
Solar PV Generated	15,098	16,981	23,362	15,995
Degree Days at 15.5°C	1,757	1,856	1,875	1,847
(an indicator of heat demand)				
Total electricity kWh	1,199,498	1,069,206	790,348	973,354
Total gas kWh	737,763	714,341	593,671	501,245

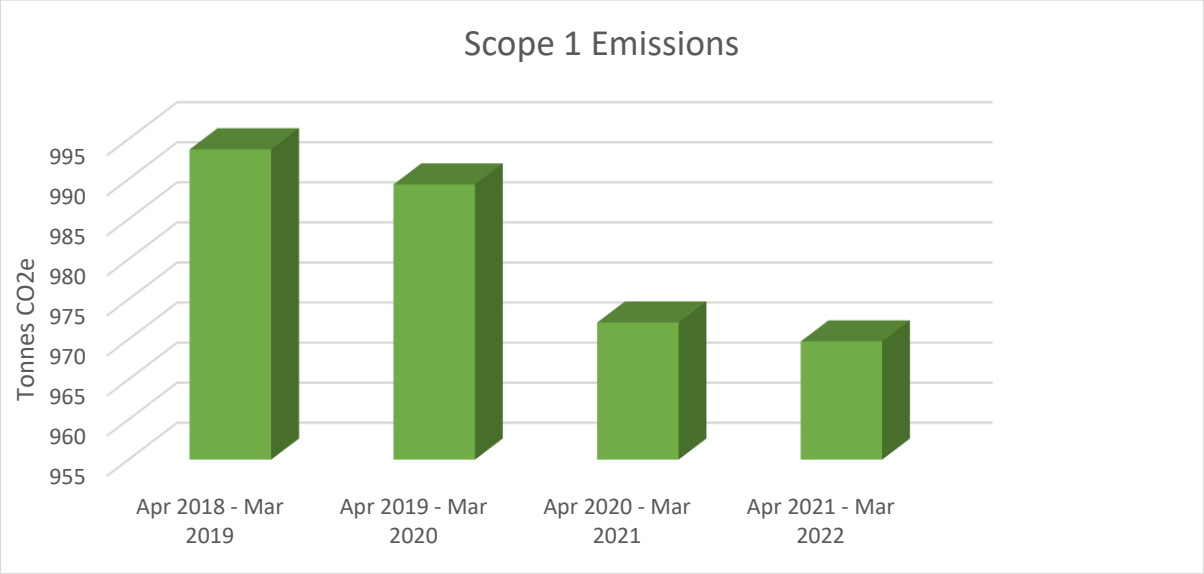
Appendix A shows a breakdown of the emissions by source in more detail.

From Table 3, the gas consumption (kWh) in the current reporting period is 42.5% less than that of the April 2019 – March 2020 reporting period. This change could be due to the heating degree days for the current period being less than that of April 2019 – March 2020 (i.e. 1,847 degree days compared to 1,856 degree days). The concept of Heating Degree Days (HDD) quantifies by how much (in degrees) and for how long (in days) the outside temperature was below the base temperature (15.5 °C in the UK) below which a building would need to be heated. Therefore, a lower value for HDD signifies less heating requirement and vice-versa. However, it is also probable that this decrease is due to better occupancy behaviour in buildings, improved energy management systems or more people working from home as the variation between the HDD of the periods being compared is not very significant (0.5% difference).

Compared to April 2018 – March 2019, it can be observed that although the HDD for the current reporting period is greater by 5%, the gas consumption is 32% less than that of April 2018 – March 2019. This perceived improvement could be due to the implementation of better energy management strategies implemented across the Council's site. Proper investigation by way of energy assessments would provide better insights to this change.

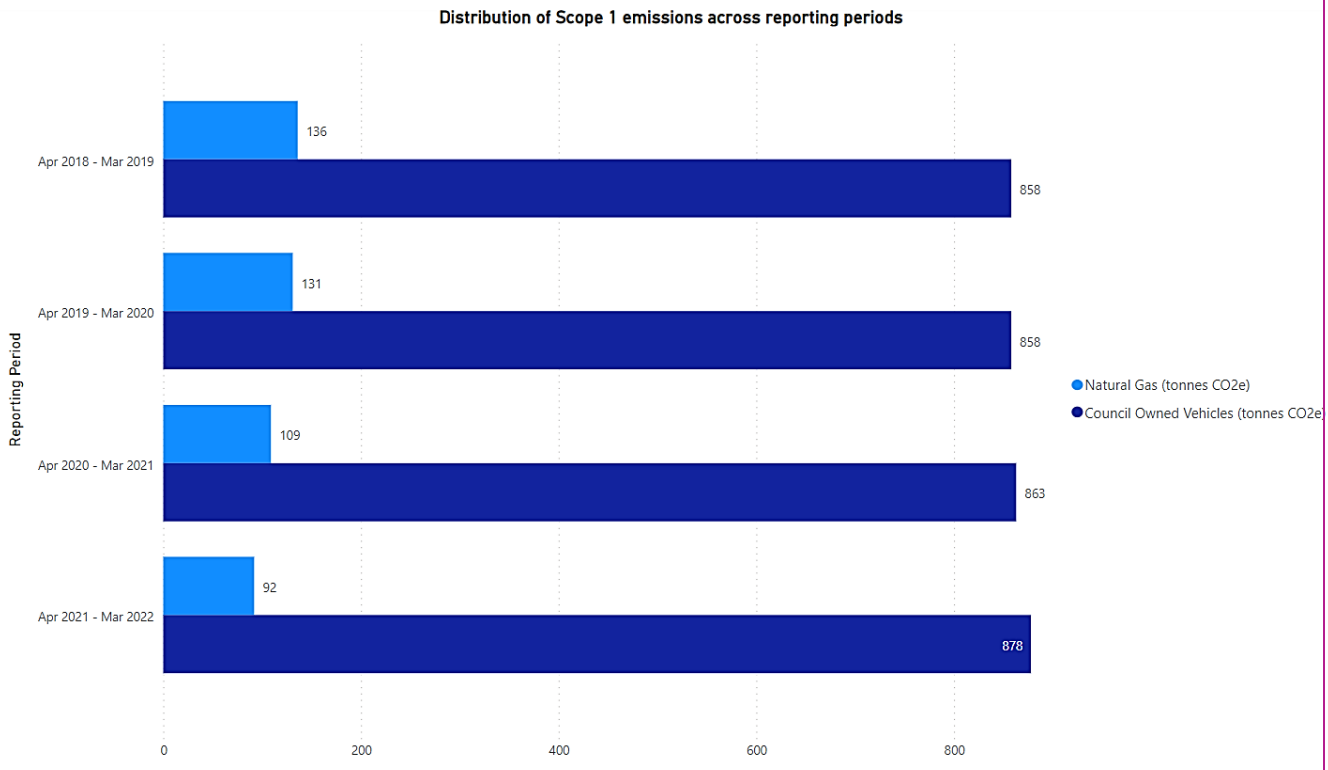
The period April 2020 – March 2021 was disrupted by the Covid-19 and so was non-representative of energy usage in the Council's day-to-day operations. As such it has not been considered in the comparative analysis.

Chart 3: Scope 1 carbon emissions by year



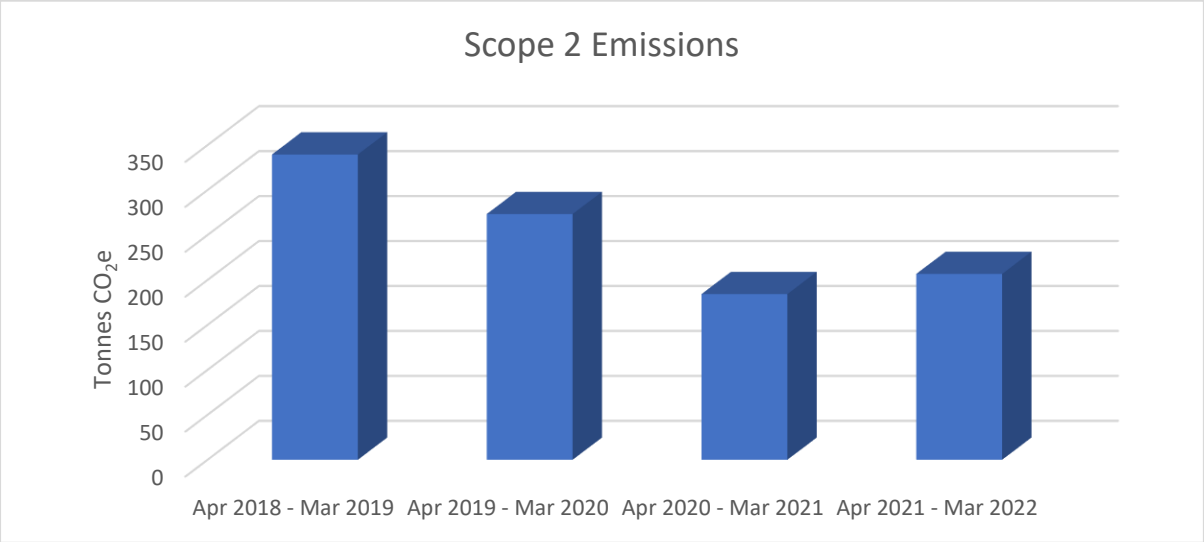
The associated CO_2e emissions for fuel consumption in Council owned vehicles has remained relatively static across the years (refer to visualisation below). Nevertheless, a decreasing trend can be observed in direct emissions associated with the Council's operations across its value chain. This is mainly attributable to the decreased gas consumption required for heating the building over the years.

Chart 4: Breakdown of Scope 1 carbon emissions by year



However, a reasonable comparison based on CO_2e emissions of the Council owned vehicles across the years cannot be made, as it is unclear whether there have been significant changes in the operational fleet as the fleet compositional data for some of the years is limited.

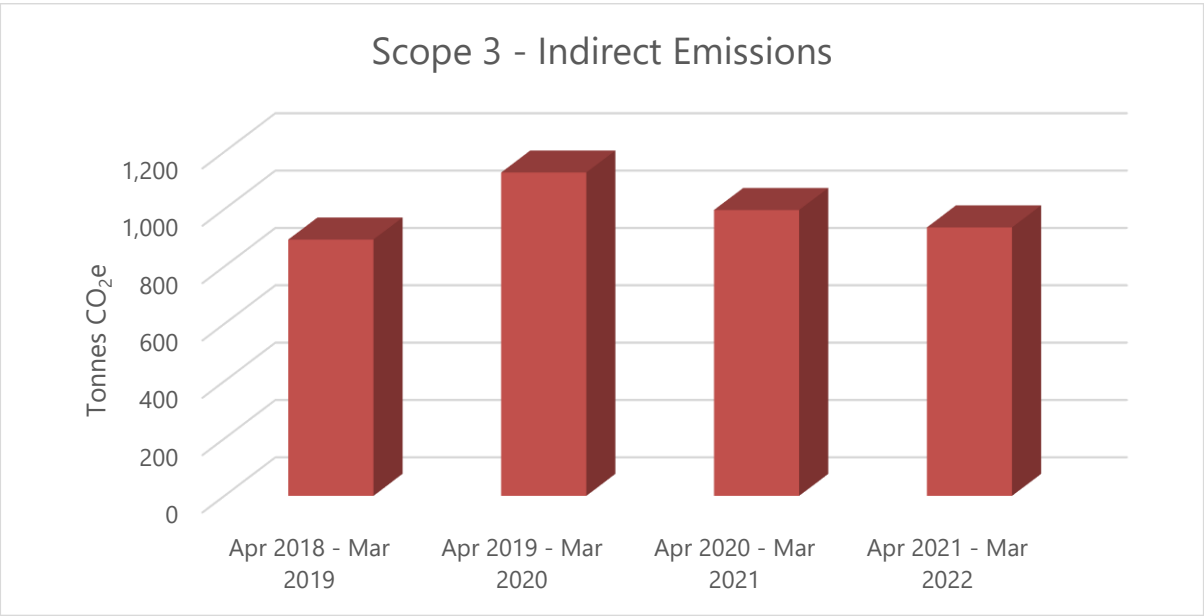
Chart 5: Scope 2 carbon emissions by year



GHG emissions associated with importing energy from the grid have decreased over the years. This could be due to a number of reasons such as decreased energy usage from year to year and a reduction in the carbon emission factor of the UK electricity grid over the years being assessed.

Accordingly, the increase observed from 2020/2021 to 2021/2022 should not be considered due to the Covid-19 pandemic and the ensuing lockdown.

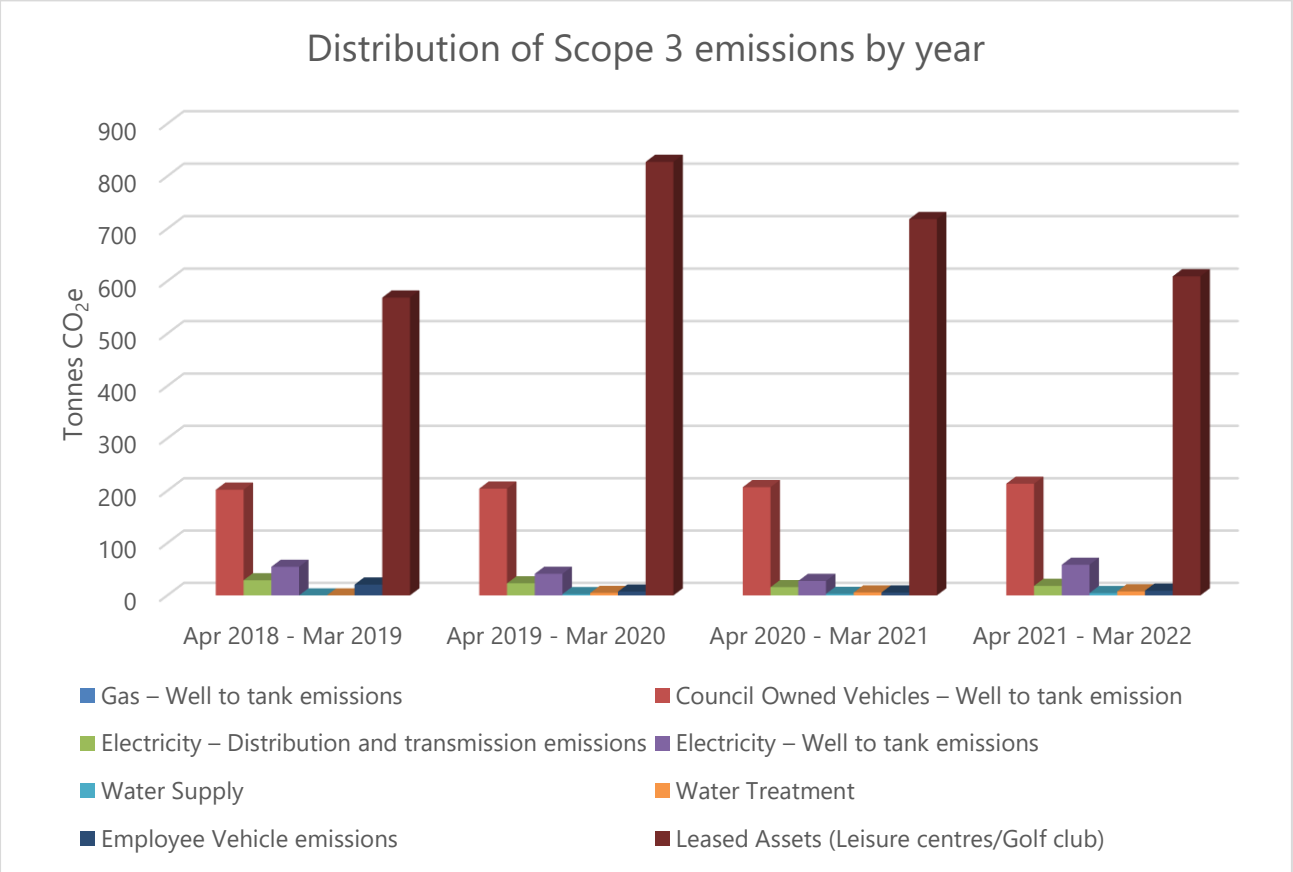
Chart 6: Scope 3 carbon emissions by year



Scope 3 emissions in the current reporting period have seen a decrease compared to previous two reporting periods (-6% against 2019/2020 and -17% against 2018/2019). Although, the electricity consumption of the Council from April 2021 – March 2022 reduced by approximately 10% compared to April 2019 – March 2020, the associated electricity well-to-tank emissions, which was the third highest contributor to Scope 3 emissions across the years, increased by 41.6%. This is due to an increase of 56% in the electricity well-to-tank carbon conversion factors between the reporting periods.

A visualisation of the breakdown of Scope 3 emissions across all covered reporting periods is provided below.

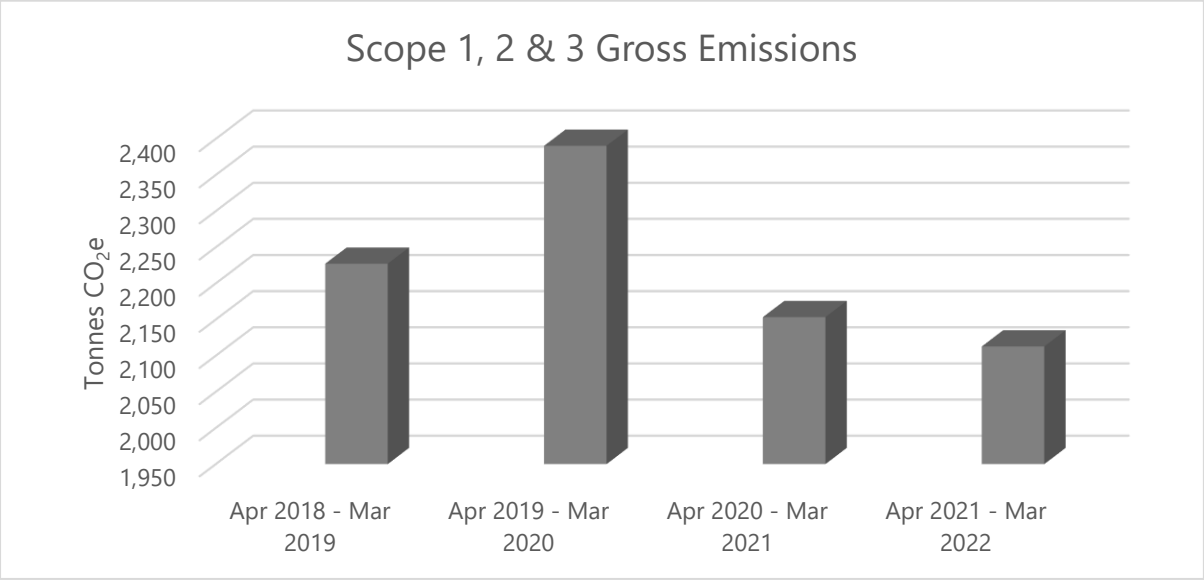
Chart 7: Breakdown of Scope 3 carbon emissions by year



Note.

The category 'Leased assets' refers to leisure centres and the golf club.

Chart 8: Scope 1, 2 & 3 carbon emissions by source by year



Overall, the gross carbon emissions across all scopes during the April 2021 – March 2022 period has decreased by 11.6% compared to the most recent relevant reporting period (April 2019 – March 2020).

3 Notes and Observations

3.1 Scope 1 & 2

Appendix A is an Excel spreadsheet that shows a breakdown of the emissions by source and makes a comparison between 2018/19 to 2021/22. This can be used to develop a carbon strategy by identifying and approaching assets with the highest emissions.

The sites below are recorded as having zero consumption between 2019 and 2022 as the utility companies will not provide meter reading and charges:

- Baldwins Lane Pavilion;
- King George V Pavilion;
- Oxhey Bowls Pavilion.

The annual cost for electricity and gas has been calculated based on a unit rate of 0.20 £/kWh and 0.033 £/kWh, respectively. However, it is possible these rates could be much higher due to current volatility of the energy market.

The Council provided data for both fuel consumption in litres and distance travelled in miles for its owned vehicles. The data for fuel consumption has been utilised for the

carbon reporting in accordance with best practice as this is deemed as more accurate as the emissions from miles travelled are directly related to the efficiency of the vehicle.

Consumption data was only provided for Council owned vehicles in 2020/21, not for 2018/19 or 2019/20. The Council had been recording the average emissions from vehicles through the last 9 years and the average is 858, which has been used for the missing years - 2018/19 and 2019/20.

3.2 Scope 3

The Council acknowledge that there is a lot of missing data for water consumption. Going forward water supply and treatment data should be recorded as it is issued from the supplier. The wastewater volumes were calculated based on the supply water volume.

Water usage for leisure centres which have been leased out to third-party operators was taken into consideration in calculating the associated Scope 3 CO_2e emissions based on the organisational boundary defined by financial responsibility. Hence, if the Council is not financially responsible for the water bill then this should be excluded from the reporting. However, water supply and treatment only account for 0.6% of the total emissions in the reporting period so any changes would make a marginal difference.

The water usage at Oxhey Pavilion was reported as 289,027 m^3 for the 2021/2022 period. From experience this is abnormally high, therefore the Council should carry out an investigation to confirm if this is accurate. It is possible that this could be correct if there was a severe leak which might have occurred during the reporting period. Consequently, the water consumption data for Oxhey Pavilion was excluded from the carbon reporting.

4 Recommendations for Gathering Data Going Forward

4.1 Scope 1 and 2 Emissions

The Council should develop a procedure for gathering and storing data as it is made available. The benefit of this is that the carbon reporting process is streamlined and progress towards targets can be tracked.

4.2 Scope 3 Emissions

Scope 3 emissions are separated into 15 different categories which includes waste, staff travel and the purchased goods supply chain. Scope 3 emissions can amount to a higher proportion of total emissions than Scope 1 and 2 combined and represent the most significant opportunity to reduce carbon emissions and the impact to climate change. So, understanding these risks through accurate and consistent measurement, evaluation and reporting should improve both resilience and reputation.

ASPE Energy can provide further guidance on how to gather Scope 3 data from third parties and assist in calculating emissions.

5 Conclusion and Recommendations

- Use carbon footprint data and Appendix A to develop a strategy to become net zero carbon.
- Sense check all data to confirm accuracy.
- Develop policies and procedures for improving the capturing of data going forward to report on Scope 3 emissions.
- Develop policies to request emissions data from suppliers to gather Scope 3 data.

6 Glossary

Term	Definition
BMS	Building Management System – Automated control for building services.
Carbon dioxide equivalent (CO_2e)	The carbon dioxide equivalent (CO_2e) allows the different greenhouse gases to be compared on a like-for-like basis relative to one unit of CO_2 and includes the six greenhouse gases with the greatest global warming potential (GWP).
Carbon footprint	A carbon footprint measures the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product. A carbon footprint is measured in tonnes of carbon dioxide equivalent (tCO2e).
Council Vehicles	Vehicles that are owned or controlled by the Council. This does not include employee-owned vehicles that are used for business purposes.
Degree Day	A heating degree day (HDD) is a measurement designed to quantify the demand for energy needed to heat a building. It is the number of degrees that a day's average temperature is below a baseline temperature, which is the temperature below which buildings need to be heated.
Electricity	Electricity used at sites owned/controlled by the Council. This is reported as a Scope 2, indirect emission. The conversion factors used are for the electricity supplied by the grid that the Council purchase - they do not include the emissions associated with the transmission and distribution of electricity.
Employee Vehicles	Travel for business purposes in assets not owned or directly operated by the Council. This includes mileage for business purposes in cars owned by employees, public transport, hire cars etc.
[Natural] Gas	Primary fuel sources combusted at a site or in an asset owned or controlled by the Council.
MPAN & MPR	The MPAN (Meter Point Administration Number) and MPRN (Meter Point Reference Number) are unique numbers assigned to

	the electricity and gas supplies. This information has been provided as a reference and can be used to identify each meter.
Solar PV	Solar Photovoltaic panels to generate renewable electricity from the sun.
Transmission and Distribution	Transmission and distribution (T&D) factors are used to report the Scope 3 emissions associated with grid losses (the energy loss that occurs in getting the electricity from the power plant to the premises).
Wastewater	Water returned into the sewage system through mains drains.
Water Supply	Water delivered through the mains supply network.
Well to Tank	Fuels have indirect Scope 3 emissions associated with the production, extraction, refining and transport of the fuel before their use known as Well-to-tank (WTT). WTT emissions have been recorded for: • Electricity • Gas • Transmission and Distribution • Council Owned Vehicles

Appendix A – A separate Excel spreadsheet showing a breakdown of the emissions by source and a comparison between 2018/19 and 2021/22

Appendix B – Data that should be gathered to report on Scope 3 emissions

The reporting of Scope 3 emissions is discretionary. The table below provides further guidance on the information required to calculate emissions from Scope 3.

Item	Category	Details Required
1	Purchased goods and services	This category includes all upstream (i.e. cradle-to-gate) emissions from the production of products purchased or acquired by the Council in the reporting year. Products include both goods (tangible products) and services (intangible products). This category includes emissions from all purchased goods and services not otherwise included in the other categories of upstream scope 3 emissions (i.e. category 2 through category 8 below). Cradle-to-gate emissions include all emissions that occur in the life cycle of purchased products, up to the point of receipt by the Council. Cradle-to-gate emissions may include: • Extraction of raw materials • Agricultural activities • Manufacturing, production, and processing • Generation of electricity consumed by upstream activities • Disposal/treatment of waste generated by upstream activities • Land use and land-use change • Transportation of materials and products between suppliers • Any other activities prior to acquisition by the reporting company Relevant purchases to the Council may include capital goods, such as office supplies, office furniture, computers, telephones, travel services, IT support, outsourced administrative functions, consulting services, janitorial, landscaping services, maintenance, repairs and operations. For accurate carbon reporting emissions, the Council should request cradle-to-gate emission factors for materials used by

		suppliers to produce purchased goods such as Environmental Product Declarations (EPDs). It is likely that many suppliers will not be able to provide all the emission data. If an EPD cannot be provided, supplementary information required includes the volume of product (kg) and the carbon emission factor (kg CO_2e). A policy should be developed so that suppliers in the supply chain are required to provide this data as part of the contract, where the volume of goods is noteworthy.
2	Capital goods	Capital goods are final products that have an extended life and are used by the Council to manufacture a product, provide a service, or sell, store, and deliver merchandise. Capital goods are treated as fixed assets or as plant, property, and equipment (PP&E). Examples of capital goods include equipment, machinery, buildings, facilities, and vehicles. The required information is the same as Category 1 above. A policy should be developed so that suppliers in the supply chain are required to provide this data as part of the contract.
3	Fuel- and energy related activities (not included in Scope 1 or Scope 2)	Transmission and distribution (T&D) losses have been included and calculated from the data provided in Scope 2.
4	Upstream transportation and distribution	Category 4 includes emissions from: • Transportation and distribution of products purchased in the reporting year, between suppliers and its own operations in vehicles not owned or operated by the Council. •

		• Third-party transportation and distribution services purchased by the Council in the reporting year (either directly or through an intermediary), including inbound logistics, outbound logistics (e.g. of sold products), and third-party transportation and distribution between the Council's own facilities. The Council requires data on: • Quantities of fuel (e.g., diesel, petrol, jet fuel, biofuels) consumed • Amount spent on fuels • Distance travelled • Vehicle type This may include managed assets - Vehicles that are used by the Council but are not owned by the organisation and generally do not appear on the organisation's balance sheet, for example, maintenance contractor vehicles, outsourced refuse and recycling trucks, road sweepers, grounds maintenance mowers etc. A policy should be developed so that suppliers using their own vehicles are required to provide this data as part of the contract.
5	Waste generated in operations	This includes emissions from third-party disposal and treatment of waste generated in the Councils owned or controlled operations in the reporting year. This category includes emissions from disposal of both solid waste and wastewater. The Council should request volume and emissions data from the waste treatment company applicable to **its own waste stream**. If this cannot be provided, the emissions can be calculated by requesting the volume of waste, type and disposal method: Example of data required: Total weight (kg) of waste type and disposal method e.g. • 5,000kg municipal waste to landfill

		• 500kg organic garden waste to composting • 1,000kg metal recycled • 1,000kg plastic recycled • 1,000kg paper recycled Data is required for the volume of supply and wastewater in cubic metres (m^3) from water bills. Local authorities have an important role in waste prevention and sustainable waste management through awareness-raising campaigns, providing separate collection for recycling and food waste, and implementing waste-to-energy schemes. It is therefore voluntary on whether the Council choose to include the emissions from waste associated with the whole borough, or just the Council's own operation.
6	Business travel	Travel for assets not owned or directly operated by the Council. This includes mileage for business purposes in cars owned by employees, public transport, hire cars etc. Require details for: <u>Vehicle</u> Fuel type, size of vehicle and distance for: • Car • Motorbike • Taxis • Bus • Rail <u>Flights</u> • Airport travelled to/from • Number of passengers • Class type • Distance

		Ferry • Foot or car passenger • Distance
7	Employee commuting	This category includes emissions from the transportation of employees between their homes and their worksites. Emissions from employee commuting may arise from: • Car • Bus • Rail • Other modes of transportation Staff would be required to provide method of transport and distance travelled. It may be difficult and time consuming to collect accurate data.
8	Upstream leased assets	This category is applicable from the operation of assets that are leased by the Council. If the Council procures the energy then this should be considered as Scope 1 and 2. If the landlord is responsible for the Scope 1 and 2 emissions, the Council should include the reporting under Scope 3. An example may include an office that the Council lease from a private landlord. All energy bills may be included as part of the lease and the energy contract is under the name of the landlord. The Council should therefore request the energy data from the landlord and include this under Scope 3. Data required include the Scope 1 and 2 data from the leased asset.

9	Downstream transportation and distribution	This category includes emissions that occur in the reporting year from transportation and distribution of sold products in vehicles and facilities not owned or controlled by the Council in the reporting year. It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
10	Processing of sold products	It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
11	Use of sold products	It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
12	End-of-life treatment of sold products	It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
13	Downstream leased assets	This category is applicable where the Council is the landlord to a lessee. If the Council procures the energy on behalf of a lessee then this should be considered as Scope 1 and 2. An example of this is where the Council may lease a premises to a lessee and include all energy costs as part of the lease. The energy contract is under the name of the Council and is therefore reported under Scope 1 and 2. If the lessee is responsible for the Scope 1 and 2 emissions, the council should include the reporting under Scope 3. An example of this is a shop that the Council own and the occupant pays for the energy bills and the contract is under their name. The Council should request the energy data from the shop occupier and report this under Scope 3.

		Data required include the Scope 1 and 2 data from the leased asset.
14	Franchises	It is assumed that this category is not applicable to the Council as it does not operate any franchises.
15	Investments	This category includes scope 3 emissions associated with the Council's investments in the reporting year, not already included in scope 1 or scope 2. This category is applicable to investors (i.e. organisations that make an investment with the objective of making a profit) and organisations that provide financial services. This category also applies to investors that are not profit driven (e.g. multilateral development banks). Investments are categorised as a downstream scope 3 category because providing capital or financing is a service provided by the organisation. Category 15 is designed primarily for private financial institutions (e.g., commercial banks), but is also relevant to public financial institutions (e.g., multilateral development banks, export credit agencies) and other entities with investments not included in scope 1 and scope 2. The Councils scope 3 emissions from investments are the scope 1 and scope 2 emissions of investees. For purposes of greenhouse gas accounting, this standard divides financial investments into four types: • Equity investments • Debt investments • Project finance • Managed investments and client services An example of the information required is the Scope 1 and 2 emissions from the bank where an investment is in place. This is based on the Council's proportional share of investment in the investee. If the Council has £1million invested in the bank and the banks total investments amount to £100million, the

		Council should report on 1% of the banks Scope 1 and 2 emissions. It is assumed that this information will be difficult to collate from third parties and that the total emissions will be proportionally small compared to other emission sources and these emissions could be excluded from the reporting.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